

Vegetation Planting Recommendations

From the
Riparian Buffers
Modification & Mitigation
Guidance Manual



Chesapeake Bay Local Assistance Department



Riparian Buffers

Modification & Mitigation

Guidance Manual



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Riparian Buffers Modification & Mitigation Guidance Manual

- Funded by a grant from the Chesapeake Bay Program Forestry Work Group with money from the US Forest Service to fund projects in the Bay watershed that deal with riparian forest buffers or forest fragmentation issues.



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Riparian Buffers Modification & Mitigation Guidance Manual

The intent of the Manual is to provide guidance and clarification for Tidewater local governments regarding the section of the Regulations describing buffer exemptions and modifications.



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Riparian Buffer Modification & Mitigation Guidance Manual

Main Sections of the Manual:

- Riparian Buffer Functions and Values
- Permitted Buffer Modifications
- Passive Recreation Facilities Exemption
- Buffer Management
- Appendices



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Riparian Buffer Modification & Mitigation Guidance Manual

Buffer Functions and Values

- Water Quality Benefits
 - Erosion and sediment control
 - Nutrient and chemical control
 - Thermal moderation



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Buffer Functions and Values

Hydrologic Benefits

- Retard Runoff
- Detention
- Infiltration



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Buffer Functions and Values

- Habitat Benefits
 - Aquatic Habitats
 - Terrestrial Habitats



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- Permitted Buffer Modifications Chapters:
 - Sight Lines and Vistas
 - Access Paths
 - Shoreline Erosion Control
 - General Woodlot Management



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Sight Lines and Vistas

- Emphasis is on filtered views achieved through pruning.
- Maintenance of three trophic layers:
 - Canopy and understory trees
 - Shrubs
 - Groundcover



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- Replacement Plantings
 - Required when vegetation is removed to create a sight line or vista
 - Native woody vegetation is preferred
 - Suggest using the rates in the Vegetation Replacement Standards table in Appendix D



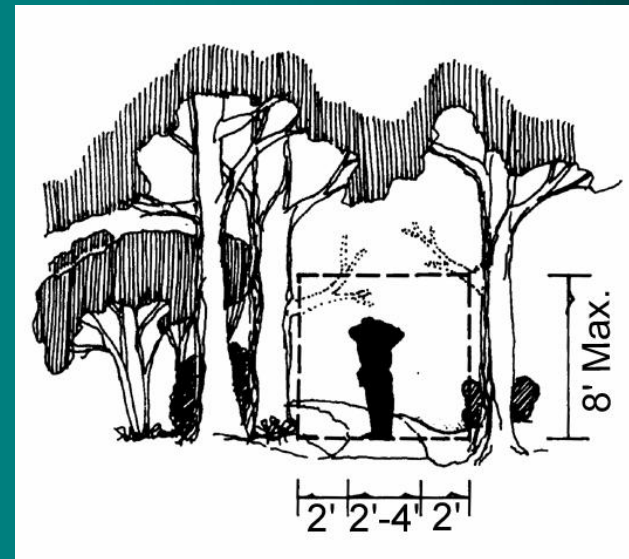
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Access Paths

- Should be limited to the minimum width necessary to the use to preserve vegetation



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Access Paths

- Residential pedestrian paths should be unpaved or have a porous surface
- Paths should wind around trees and shrubs rather requiring their removal.



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General Woodlot Management

- The goal of woodlot management should be to develop a self-sustainable, un-even stand of mixed trees, shrubs and groundcover with a floor of either leaf-litter and debris or mulch



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General Woodlot Management

- Thinning only for:
 - Young overstocked forest
 - Degraded or older poorly managed stand



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General Woodlot Management

- Under no circumstances should a complete understory layer be removed under the claim of thinning for management



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General Woodlot Management

- “Noxious weed” is any invasive species that has gotten out of control and has become harmful to the health and survival of the woody vegetation in the buffer.



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Shoreline Erosion Control

- Determined to be **necessary**
- Follows **best technical advice**
- **Preserves** indigenous **vegetation**
- Complies with **erosion and sediment control** requirements
- **Minimizes land disturbance** for project and access to project
- **Appropriate mitigation plantings**
- **Consistent with Comprehensive Plan**



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- WQIA required
 - Ensure project will not cause excessive disturbance or removal of buffer vegetation



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Passive Recreation Facilities Exemption

Passive recreation includes...	Passive recreation does not include...
<p>Hiking</p> <p>Biking</p> <p>Picnicking</p> <p>Wildlife viewing</p> <p>Public boardwalk or trail use</p> <p>Fishing</p>	<p>Organized sports facilities and ball fields</p> <p>The use of motorized vehicles, such as golf carts, motorcycles, motor boats or all-terrain vehicles (ATVs)</p> <p>Structures such as pools, decks or gazebos</p> <p>Boat ramps, docks, piers, or marinas</p> <p>Any activity that contributes to erosion, causes significant vegetation loss, or involves the installation of excessive amounts of impervious surfaces</p>



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Passive Recreation Facilities Exemption

- Well designed trails, paths and boardwalks take advantage of natural features, are low-maintenance and meet the needs of the user.
- If encroaching, they should keep to the outer landward 25 feet of the 100' buffer with occasional direct paths to the water in the least sensitive areas.



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Buffer Management Chapters

- Buffer Establishment
- Buffer Land Use Activities
- Buffer Area Modification Violations



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Land Uses

- Generally, avoid activities that can damage the vegetation in the buffer



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Violations

- Common Causes:
 - Lack of knowledge
 - Invisibility of buffer boundaries
 - Deliberate destruction



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Vegetation Planting Recommendations



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Vegetation Planting Recommendations

Based on unpublished data from the Department of Conservation and Recreation, Division of Natural Heritage

TYPICAL STOCKING RATES OF VIRGINIA FOREST STANDS			
	All Stands MEAN	Riparian Stands MEAN	Estuarine Stands MEAN
Shrub/Sapling ^a Density (stems/acre)	269.6	199.2	340.0
Subcanopy ^b Density (stems/acre)	110.4	83.3	137.5
Overstory ^c Density (stems/acre)	100.8	94.2	107.5
Total Density (stems/acre)	480.8	376.7	585.0
Basal Area (ft ² /acre)	228.7	239.5	217.9
a - shrub/sapling stems range from 1 to 4 inch dbh (diameter breast height - 4.5 ft.); b - subcanopy stems range from 4 to 10 inches dbh; c - overstory stems are equal to or greater than 10 inches dbh.			



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Vegetative Planting Recommendations

- These are suggestions for planting rates. Each locality should develop planting rates suitable to their area.



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Vegetation Planting Recommendations

Buffer Establishment, Replacement and Restoration

- **Replacement**: Replacing vegetation that was removed for sight lines, vistas, or other cases where there was a choice about what was removed.



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Vegetation Planting Recommendations

Small areas of replacement where choice is involved and there is knowledge of what was removed

VEGETATION REPLACEMENT RATES		
VEGETATION REMOVED	PREFERRED REPLACEMENT VEGETATION	ACCEPTABLE ALTERNATIVE VEGETATION
1 tree or sapling 1/2"-2 1/2" caliper	1 tree @ equal caliper or greater	Or 2 large shrubs @ 3'-4' Or 10 small shrubs or woody groundcover @ 15"-18"
1 tree \geq 2 1/2" caliper	1 tree @ 1 1/2" - 2" caliper, or 1 evergreen tree @ 6' min. ht., per every 4" caliper of tree removed (ex: a 12" cal. tree would require 3 trees to replace it)	Or 75% trees @ 1 1/2" - 2" and 25% large shrubs @ 3'-4' per every 4" caliper of tree removed. (ex: a 12" cal. tree removed would require 2 trees and 1 large shrub) Or 10 small shrubs or woody groundcover @ 15"-18" per 4" caliper of tree removed (ex: a 8" caliper tree removed requires 20 small shrubs .)
1 large shrub	1 large shrub @ 3'-4'	Or 5 small shrubs or woody groundcover @ 15"-18"
* Woody groundcover is considered to be a woody, spreading shrub that remains close to the ground, to 18" high, such as a shore juniper, <i>juniperus conferta</i> . Vines may not be considered "woody groundcover" for the purpose of vegetation replacement.		



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Vegetation Planting Recommendations

Buffer Establishment, Replacement and Restoration

- **Restoration**: Generally applies to larger areas of vegetation removal such as for woodlot management or shoreline erosion control

Suggested: Use Restoration/Establishment Table A



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Vegetation Planting Recommendations

Buffer Establishment, Replacement and Restoration

- **Establishment**: Adding new woody vegetation to a buffer where none exists, such as, conversion of agricultural or silvicultural land to another land use
 - **Suggested: Use Restoration / Establishment Table B**



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Vegetation Planting Recommendations

Restoration / Establishment Table A

- $\frac{1}{4}$ acre or less of buffer (Up to 10,890 square feet or less)
- For every 400 square-foot unit (20'x20') or fraction thereof plant one unit.



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Vegetation Planting Recommendations

Restoration / Establishment Table A

Example:

- 100-foot wide lot x 100-foot wide buffer = 10,000 square feet
- Divide by 400 square feet (20'x20' unit) to get 25 units



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Vegetation Planting Recommendations

Restoration/Establishment Table A

One unit =

- *one (1)* canopy tree @ 1½” - 2” caliper or large evergreen @ 6’
- *two (2)* understory trees @ ¾” – 1 ½” caliper
 - or *one (1)* understory tree and *two (2)* large shrubs @ 3’-4’
- *three (3)* small shrubs or woody groundcover @ 15” – 18”



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Vegetation Planting Recommendations

- **Restoration / Establishment Table B**
 - **Greater than ¼ acre (More than 10,890 square feet)**
 - **3 options**



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Vegetation Planting Recommendations

Restoration / Establishment Table B

- **Option A:** Plant at the same rate as in Table A
 - *one (1)* canopy tree @ 1½” - 2” caliper or large evergreen @ 6’
 - *two (2)* understory trees @ ¾” – 1 ½” caliper
 - or *one (1)* understory tree and *two (2)* large shrubs @ 3’-4’
 - *three (3)* small shrubs or woody groundcover @ 15” – 18



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Vegetation Planting Recommendations

Table B - Option B:

- Plant the waterside 50% of buffer (from waterline inland 50 feet) as in Table A
- **AND**
- Plan the landward 50% of buffer (from 50 feet to 100 feet inland) in either bare root seedlings or container grown seedlings



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Vegetation Planting Recommendations

Table B - Option B (continued)

- Bare root seedlings or whips at 1,210 stems per acre, approximately 6'x6' on center (Minimum survival required after two growing seasons: 600 plants)

OR

- Container grown seedlings tubes at 700 per acre approximately 6'x6' on center (minimum survival after two growing seasons: 490 plants)



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Vegetation Planting Recommendations

Table B - Option C

- If the applicant is willing to enter into a five year maintenance and performance guarantee:
- 100% of the buffer planted in either bare root seedlings/whips or container grown seedlings at the rates and survival requirements as described above.



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Vegetation Planting Recommendations

One acre or more of buffer to be re-established:

- With an evaluation and recommendation of an arborist, forester, or other professional, natural regeneration may be an acceptable method of buffer establishment, however a forestry management plan should be in place prior to any vegetation being removed. The Virginia DOF recommends a 50' Streamside Management Zone, within which only 50% of the forest canopy can be harvested.



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Vegetation Planting Recommendations

- If over 20% of vegetation within the 35' closest to the water must be cleared for woodlot management purposes (such as to remove invasives), it is recommended that vegetation be re-established at the rates in the Restoration / Establishment Tables.



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